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10/516,412	12/02/2004	Yoshihiro Taura	SON-2762	2852

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EXAMINER	
YEH, EUENG NAN	
ART UNIT	**PAPER NUMBER**
2624	
MAIL DATE	**DELIVERY MODE**
01/16/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/516,412	TAURA, YOSHIHIRO	
	Examiner	Art Unit	
	Eueng-nan Yeh	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *Dec 2, 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *Dec 2, 2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The title of the invention, "Image processing circuit, image processing method, and camera device" is too general to reveal the real intention to which the claims are directed. A new title is suggested: "Image processing circuit, image processing method, and camera device to suppress color rolling".

3. The abstract of the disclosure is objected to because it exceeds the 150 words limitation. The abstract should be in a brief narrative of the disclosure as a whole and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. Correction is required. See MPEP § 608.01(b).

4. The disclosure is objected to because of the following informalities and appropriate corrections are required:

- Page 6, line 1: "FIG. 2 is a block diagram". The correct figure number is FIG. 3.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kondo et al. (UA 5,038,205) and Sobol et al. (US 2003/0081830 A1).

Regarding claim 1 (circuit), Kondo discloses image processing system comprising:

a signal processing means for extracting prime color signals from an input image signal (depicted in figure 4, numeral 54 is the signal processing means "... an optical image is projected by a lens system 51 onto a charge-coupled device (CCD) 52 ... separated signals S3(4e), S3(G) and S3(Cy) are supplied through the AGC portion of circuit 53 to an arithmetic circuit 54, in which such signals are converted into three primary color signals, that is, red, green and blue (R,G,B) ..." at column 1, line 13);

a color change detecting means for detecting the image signal based on integrated data of each prime color signal extracted by the signal processing means (depicted in figure 4, numerals 26, 27, 28, and 29 are the color change detecting means. Where IR, IG, and IB are integrated data of each primary color signals of red, green, and blue, respectively. "... Dividing circuit 26 is adapted to calculate the ratio IR/IG for every phase. Similarly, dividing circuit 27 calculates the ratio IB/IG for every phase. The

calculated ratios IR/IG and IB/IG are supplied to a judgment circuit 28 and to a gain control signal generator 29 ..." at column 5, line 45).

Kondo discloses the integrated data ratios IR/IG and IB/IG to be used to generate gain control signals DGR and DGB for automatic white balance processing. Kondo does not explicitly disclose color changes to indicate the white balance processing.

Sobol, in the same field of endeavor of color correction ("correct the color in a scene based on detecting the presence of artificial illumination in the scene" in paragraph 2, line 3), teaches "... these color shifts caused by the illumination source can be corrected. This correction is typically called white balancing. For proper white balancing the illuminant of the scene must be known" in paragraph 6, line 1. See also," Artificial illumination is typically powered by alternating current ... By sampling the light in a scene, the presence of an artificial illuminant can be determined. Photo sensors today, typically charged coupled devices (CCD), can change the time between exposures (sample rate) as well as exposure lengths" in paragraph 21, line 1. Furthermore, "The overall brightness for each exposure is compared for variability between exposures ... The variability in the overall brightness can be compared to a threshold value and when the variability is higher than the threshold the scene contains an artificial illuminant" in paragraph 22, line 15. Without departing from the scope and spirit of Sobol's methodology, the variability detection technique can be used to detect the changes of the values of integrated primary color signal.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to include the image processing system Kondo made with color change detection technique as taught by Sobol, such that "apparatus that can detect the presence of artificial illumination in a scene can improve digital cameras and other devices that captures scenes using photo sensors" in paragraph 20, line 1.

Regarding claim 9 (method),

a first step of extracting prime color signals from the image signal (discussed in claim 1, a signal processing means);

a second step of calculating integrated data of each color signal based on the extracted prime color signals (depicted in Kondo figure 4 where IR, IG, and IB are integrated data of each primary color signals of red, green, and blue, respectively);

a third step of extracting color changes included in the image signal based on changes in the integrated data of each color signal (discussed in claim 1, a color change detecting means).

Regarding claim 17 (device),

an image pickup means for picking up an image of an object and outputting an image signal (depicted in Kondo, figure 4, numerals 51 and 52: "... an optical image is projected by a lens system 51 onto a charge-coupled device (CCD) 52′ at column 1, line 13);

a signal processing means for extracting prime color images from the image signal output from the image pickup means (discussed in claim 1, a signal processing means);
a color signal detecting means for calculating integrated data for each color signal based on the prime color signals extracted by the signal processing means (depicted in Kondo figure 4 where IR, IG, and IB are integrated data for each primary color signals of red, green, and blue, respectively);
a color change detecting means for detecting color changes included in the image signal based on changes of integrated data of each color signal calculated by the color signal detecting means (discussed in claim 1, a color change detecting means).

Regarding claims 2, 10, and 18, the color change detecting means detects periodic color changes (depicted in Kondo figure 3 and figure 6, numeral 101 to detect periodic color changes).

Regarding claims 3, 11, and 19, the color change detecting means detects periodic color changes by a change of B signal with respect to R signal and G signal of the color signals (discussed in claims 1, 9, and 17, the variability detection technique detects the changes of signals R, G, and B. Furthermore, the integrated data rations IR/IG and IB/IG disclosed by Kondo are the changes of B signal with respect to R signal and G signal of the color signals).

Regarding claims 4, 12, and 20, the color change detecting means detects periodic color changes when a level of B signal among the color signals becomes smaller than a predetermined value and starts to become lager again (as discussed in claims 1, 9, and 17, the threshold comparison technique can apply to B signal to detect the periodic color changes discussed in claims 2, 10, and 18).

Regarding claims 5, 13, and 21 the color change detecting means detects periodic color changes by monitoring changes of the integrated data of each color signal for each field of the image signal (discussed in claims 1, 9, and 17, that the integrated data IR, IG, and IB are monitored by Kondo's figure 4, numerals 26, 27, 28, and 29 to detect the periodic color changes which were discussed in claims 2, 10, and 18).

Regarding claims 6-7, 14-15, and 22-23 (depicted in Kondo figure 4, numeral 28 gain control judgment and figure 6, numerals 101, 102, and 104 show the periodic color changes detection and the gain control signal DGA to be used for automatic white control processing).

Regarding claims 8, 16, and 24 the circuit makes an auto white balancing control speed up and suppresses signal gains of color components in the direction where periodic color changes occur (depicted in Kondo figure 4, numeral 29 "the gain control signal generator 29 which is adapted to calculate the adjusted gain levels of the color

signals R and B based on the ratios IR/IG and IB/IG ..." at Kondo column 6, line 57. Thus, corrections occur in the direction where periodic color changes occur).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eueng-nan Yeh whose telephone number is 571-270-1586. The examiner can normally be reached on Monday-Friday 8AM-4:30PM EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

E.Y.

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PRIMARY EXAMINER